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PATENTS ACT 1952

APPLICATION FOR A STANDARD PATENT

I/We, HAYDEN GREGORY BOSTOCK of UNIT 2, 30 MANLY STREET, CABOOLTURE, QUEENSLAND, 4510, hereby apply for the grant of a standard patent for an invention entitled:

STIRRUP

which is described in the accompanying provisional specification.

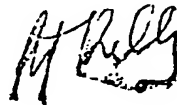
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DATED this fourth day of September, 1989

HAYDEN GREGORY BOSTOCK

By:



Registered Patent Attorney

TO: THE COMMISSIONER OF PATENTS  
AUSTRALIA.

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(12) PATENT ABSTRACT      (11) Document No. AU-A-62109/90  
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(57) Claim

1.            A safety stirrup comprising an inverted U shaped mounting member having means located in the arcuate portion of the U to enable a stirrup strap to be attached thereto; a foot support pivoted between the extremities of the mounting member by means of two pins, one each of which extends through a mounting member extremity and an extension projecting at right angles from each end of the foot support; a foot upper restraining portion comprising two arms which co-operate together to form a looped configuration extending from the extensions formed on the foot support, each said arm being pivotal outwardly from its adjacent support extension; co-operating engagement means between the foot upper restraining portion and the inverted U shaped mounting member to retain the foot upper restraining portion in a plane within the inverted U shaped mounting member when the stirrup is in normal use and to thereby prevent the arms of the foot upper restraining portion from pivoting outwards; restriction

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means acting between the foot upper restraining portion and the inverted U shaped mounting member to restrict the movement of the foot upper restraining portion to only the direction which is opposite to that in which the foot is inserted; wherein pivoting the foot support and the foot upper restraining portion from the normal in use arrangement, enables the arms of the foot upper restraining portion to pivot outwardly.

COMMONWEALTH OF AUSTRALIA

## The Patents Act 1952

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COMPLETE SPECIFICATION FOR THE INVENTION ENTITLED:

## STIRRUP

The following statement is a full description of the invention including the best method of performing it known to me:

THIS INVENTION relates to horse riding stirrups and is particularly concerned with safety stirrups which prevent the rider's foot from being caught in the stirrup in the event of the rider being thrown from the horse.

5           Stirrups commonly used today generally include a D shaped metal structure with a slot located in the centre of the arcuate portion of the D to enable the stirrup to be attached to a stirrup strap. In use, the rider's foot is inserted into the stirrup such that a base portion defined by an inner surface of the upright of the D of the stirrup  
10.       locates against the sole of the rider's foot and the arcuate portion of the stirrup locates against the top of the rider's foot. In this way the rider's foot is held in place and does not easily come out of the stirrup when the horse increases  
15       its gait and trots or gallops. If the rider's foot were to come free, it is possible that the rider would be thrown from the saddle.

          The main problem with existing stirrups is that in the event of the rider falling from the saddle, one of the  
20       rider's feet is often caught in the stirrup. This can cause serious injury to the rider since the rider may be dragged along beside the horse. In the main, experienced riders are often able to extract their feet from the stirrups when they start to fall out of the saddle, or are able to retain their  
25       balance. Inexperienced, novice or disabled riders, however, normally do not react until such time as they cannot extract

their feet from the stirrups, and hence, they are more likely to suffer serious injury.

Safety stirrups have previously been devised to overcome some of these problems. One form of safety stirrup includes a frangible or weakened portion of the stirrup located adjacent to the stirrup strap attachment slot. In use, this frangible portion is designed to break away if the rider's foot is caught in the stirrup when the rider is thrown from the saddle.

This frangible stirrup is satisfactory in that the rider is saved from further injury which may be caused by being dragged along the ground. However, the rider cannot easily remount, since the saddle now has only one operable stirrup and the rider may be thrown from the saddle again should the horse increase its gait. Hence the rider should replace the broken frangible stirrup before continuing, which may be inconvenient or impossible.

Also, the frangible stirrup often does not prevent the rider from suffering leg injuries. Hence, they are only of limited benefit for novice or disabled riders. A further problem with these stirrups is that they are more bulky than conventional stirrups in the region of attachment to the stirrup strap and this increased bulk often causes wear to the rider's clothing.

It is therefore an object of the present invention to provide a stirrup which alleviates or overcomes some of

the problems discussed above.

According to the present invention there is provided a safety stirrup comprising an inverted U shaped mounting member having means located in the arcuate portion of the U to enable a stirrup strap to be attached thereto; a  
5 foot support pivoted between the extremities of the mounting member by means of two pins, one each of which extends through a mounting member extremity and an extension projecting at right angles from each end of the foot support; a foot upper restraining portion comprising two arms which  
10 co-operate together to form a looped configuration extending from the extensions formed on the foot support, each said arm being pivotal outwardly from its adjacent support extension; co-operating engagement means between the foot upper  
15 restraining portion and the inverted U shaped mounting member to retain the foot upper restraining portion in a plane within the inverted U shaped mounting member when the stirrup is in normal use and to thereby prevent the arms of the foot upper restraining portion from pivoting outwards; restriction  
20 means acting between the foot upper restraining portion and the inverted U shaped mounting member to restrict the movement of the foot upper restraining portion to only the direction which is opposite to that in which the foot is inserted; wherein pivoting the foot support and the foot  
25 upper restraining portion from the normal in use arrangement, enables the arms of the foot upper restraining



portion to pivot outwardly.

The co-operating engagement means is preferably a projection formed on each arm of the foot upper restraining portion, adjacent to the pivotal connection with the support extension, and an aligned socket formed in the inwardly facing arms of the inverted U shaped mounting member. The projection is suitably maintained within the socket to thereby prevent pivotal rotation of the foot upper restraining means from the plane of the mounting member during normal use, by spring-biasing the sides of the mounting member against the restraining means. The projections could equally well be formed on the inwardly facing sides of the mounting member with corresponding sockets formed in the foot upper restraining portion.

The restriction means may comprise one or more, preferably two, projections which extend from the sides of the U shaped mounting member, inwardly thereof, which engage against the foot upper restraining portion when the stirrup is in normal use. Each projection will suitably overlap the foot upper restraining portion to thereby prevent pivoting of the restraining portion through the plane of the mounting member. That is, pivoting can only occur in one direction. A similar result may be achieved by one or more, preferably two, projections extending from the foot upper restraining portion which engage the opposite sides of the mounting member.

The mounting pins preferably comprise screws which pass from the exterior of the stirrup through the U shaped mounting member to be threadingly engaged with the foot support. Each screw is contained within a dual diameter cavity in the mounting member such that the mounting member is fractionally moveable relative to each screw in a direction away from the foot support (i.e. in alignment with the screw axes) when the foot upper restraining portion pivots from its normal in use position. To this end, each screw preferably has an enlarged head which recesses into the wider diameter cavity, and outward movement of the mounting member causes the head to seat against the narrow diameter cavity and therefore limit the amount of outward movement of the mounting member. The screw threaded portion of the screw is suitably formed on a narrow diameter section at the end of the screw.

The foot upper restraining portion is preferably arcuate in shape and the arms preferably cooperate in a male-female arrangement. This may comprise an integrally formed pin extending from the tip of one of the arms of the foot upper restraining portion which is accommodated in a complementary shaped recess formed in the tip of the other of said arms.

The means for locating the stirrup strap in the mounting member may be a conventional arrangement such as a slot through which the strap is threaded, or a known toggle

type connection. The former arrangement is preferred.

Suitably the foot support portion is in the form of a caste plate or slotted plate which is oriented in a generally horizontal plane in use. Preferably the extensions  
5 formed on the foot support are walls which are integrally formed with the extremities of the foot support.

A preferred embodiment of the invention will now be described with reference to the accompanying drawings, in which:-

Figure 1 is a perspective rear view of a safety stirrup in its normal in use configuration and constructed in accordance with the present invention;

Figure 2 is a perspective front view of the stirrup of Figure 1 depicting the upper foot restraining portion pivoted out of the plane of the mounting member;

Figure 3 is a perspective front view of the stirrup of Figure 2 depicting a foot releasing configuration; and

Figure 4 is a part sectional rear plan view of the stirrup of Figure 1 showing the stirrup in greater detail.

Referring to all the drawings in which like numbered parts indicate the same features, the safety stirrup comprises an inverted U shaped mounting member 11 with a foot support 17 provided between the extremities thereof. A slot 13 is located in the arcuate portion of the mounting member for attachment of a stirrup strap (not illustrated) in a  
20 known manner.  
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The foot support 17 is pivoted between the extremities of the mounting member 11 by means of screws 15 which pass through openings 15a in the said extremities and which are screwed into threaded cavities 15b formed in extensions 15c projecting at right angles to the foot support and formed integrally therewith. The screws are profiled with an enlarged head 15d, an intermediate collar 15e and a reduced diameter threaded section 15f. The arrangement is such that movement of the mounting member arms outwardly (in the direction indicated by the solid arrows) by an amount equivalent to the depth of the openings 15a below the screw heads, is possible as hereinafter described.

A foot upper restraining portion 12 comprises two arms 18, 19 which extend upwardly from the extensions 15c to form a closed loop when the stirrup is in the normal in-use configuration depicted in Figures 1 and 4. The arms 18, 19 meet at an apex and are prevented from relative lateral movement by virtue of a pin 23 on the end of arm 19 fitting into a recess 24 in the end of arm 18.

The region where the arms 18, 19 meet with the extensions 15c provide pivotal connections with pins 20. These pivotal connections are such that the arms can pivot outwardly when they are not restrained by the mounting member 11, as shown in Figure 3.

Cooperative engagement means are provided between the foot upper restraining portion 12 and the mounting member

11 to retain the foot upper restraining portion in a plane within the mounting member when the stirrup is in normal use. Such means comprises a dimple projection 21 on each of the foot upper restraining portions and a socket 22 formed in each arm of the mounting member. In normal use, the dimple projections 21 are retained within the sockets 22 by virtue of the mounting member being spring biased against the arms 18, 19 of the foot upper restraining portion 12.

Restriction means 16 are formed integrally with each side of the mounting member 11. These are lobes projecting on the inwardly facing regions of the mounting member which prevent the foot upper restraining portion 12 from pivoting through the mounting member. That is, the foot upper restraining portion can only pivot in one direction, viz the direction opposite to that in which the user's foot is inserted in the stirrup.

In normal use, the rider's foot is inserted through the front of the stirrup (that is, the opposite side to that depicted in Figures 1 and 4) to a position where the sole of the foot rests on the foot support 17 and the foot upper contacts the foot upper restraining portion 12. Pivoting of the foot upper restraining portion 12 is prevented during normal riding due to the downward pressure of the foot on the foot support and the spring biasing of the mounting member against the arms of the foot upper restraining portion which ensure that the cooperative engagement means, viz the dimple

projections 21 and sockets 22, are maintained in close abutment.

When the rider is thrown from the saddle, reorientation of the rider's foot from a substantially horizontal riding position to an inclined position causes a turning force to be exerted by the rider's foot upper against the foot upper restraining means 12. This turning force is sufficient to overcome the spring biasing force retaining the dimple projections 21 in the sockets 22 and the entire foot upper restraining means pivots out of the plane of the mounting member 11 to a position such as indicated in Figure 2. Simultaneous with such pivoting, once the foot upper restraining means has passed the sides of the mounting member 11, the force imposed by the foot upper causes the arms 18, 19 to immediately pivot outwardly from each other about their pivot points 20, as depicted in Figure 3, and the rider's foot to be released from the stirrup.

In this manner, the rider's foot is prevented from being caught in the stirrup, thus reducing the possibility of injury to the rider. Furthermore, the stirrup is such that it can readily be returned to its normal in use position by simply pivoting the two arms 18, 19 together and rotating the foot upper restraining portion back to the plane of the mounting member by mere hand manipulation. This is possible since the spring biasing force exerted by the mounting portion can readily be overcome by simple hand exertion.

This is particularly important to enable the rider to immediately remount after being thrown from the saddle.

While the foregoing described a preferred embodiment of the invention, various modifications can be included without departing from the spirit of the invention. The releasable securing means for example, could include a variable biasing facility such that the stirrups would require very little force to open for novice riders, but much greater force to open for experienced riders.

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**CLAIMS**



## THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. A safety stirrup comprising an inverted U shaped mounting member having means located in the arcuate portion of the U to enable a stirrup strap to be attached thereto; a foot support pivoted between the extremities of the mounting member by means of two pins, one each of which extends through a mounting member extremity and an extension projecting at right angles from each end of the foot support; a foot upper restraining portion comprising two arms which co-operate together to form a looped configuration extending from the extensions formed on the foot support, each said arm being pivotal outwardly from its adjacent support extension; co-operating engagement means between the foot upper restraining portion and the inverted U shaped mounting member to retain the foot upper restraining portion in a plane within the inverted U shaped mounting member when the stirrup is in normal use and to thereby prevent the arms of the foot upper restraining portion from pivoting outwards; restriction means acting between the foot upper restraining portion and the inverted U shaped mounting member to restrict the movement of the foot upper restraining portion to only the direction which is opposite to that in which the foot is inserted; wherein pivoting the foot support and the foot upper restraining portion from the normal in use arrangement, enables the arms of the foot upper restraining portion to pivot outwardly.

2. A safety stirrup as claimed in claim 1 wherein the co-operating engagement means is a projection formed on each arm of the foot upper restraining portion, adjacent to the pivotal connection with the support extension, and an aligned socket formed in the inwardly facing arms of the inverted U shaped mounting member.

3. A safety stirrup as claimed in claim 1 or claim 2, wherein the restriction means comprises a pair of projections, which respectively extend from the sides of the U shaped mounting member, inwardly thereof, and engage against the arms of the foot upper restraining portion when the stirrup is in normal use.

4. A safety stirrup as claimed in any one of claims 1-3, and wherein the inverted U shaped mounting member is spring-biased against the foot support in the region where the said foot support pivots with respect thereto.

5. A safety stirrup as claimed in any one of the preceding claims, wherein each mounting pin comprises a screw which passes from the exterior of the stirrup through the U shaped mounting member and is threadingly engaged with said foot support.

6. A safety stirrup as claimed in claim 5, wherein the inverted U shaped mounting member is fractionally moveable relative to each said screw in a direction away from the foot support in alignment with the axis of each screw, when the foot upper restraining portion pivots from its

normal in use position.

7. A safety stirrup as claimed in any one of the preceding claims, wherein the arms of the foot upper restraining portion co-operate in a male-female arrangement.

8. A safety stirrup as claimed in any one of the preceding claims, wherein the foot support is a slotted plate.

9. A safety stirrup as claimed in any one of the preceding claims, wherein the extensions formed on the foot support are walls which are integrally formed with the extremities of the foot support.

10. A safety stirrup substantially as herein described with reference to the accompanying drawings.

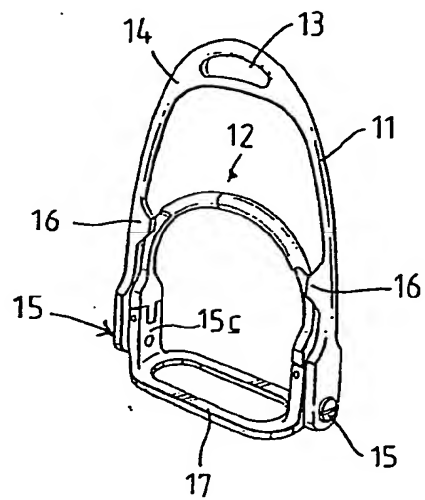
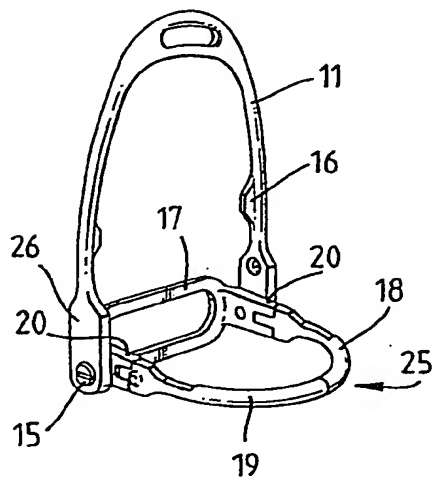
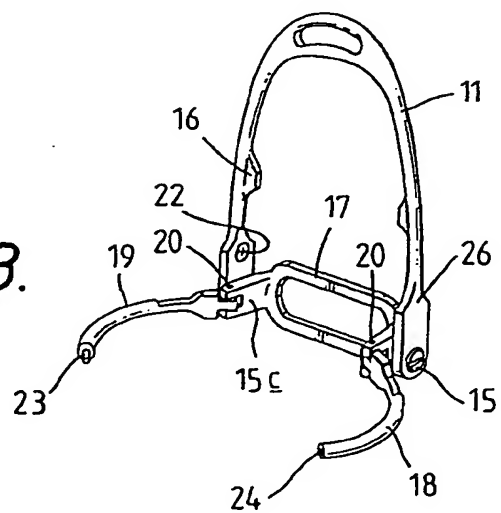
DATED this 4th day of September 1990

HAYDEN GREGORY BOSTOCK

By his Patent Attorneys

CULLEN & CO.

**DRAWINGS**

*Fig.1.**Fig.2.**Fig.3.*

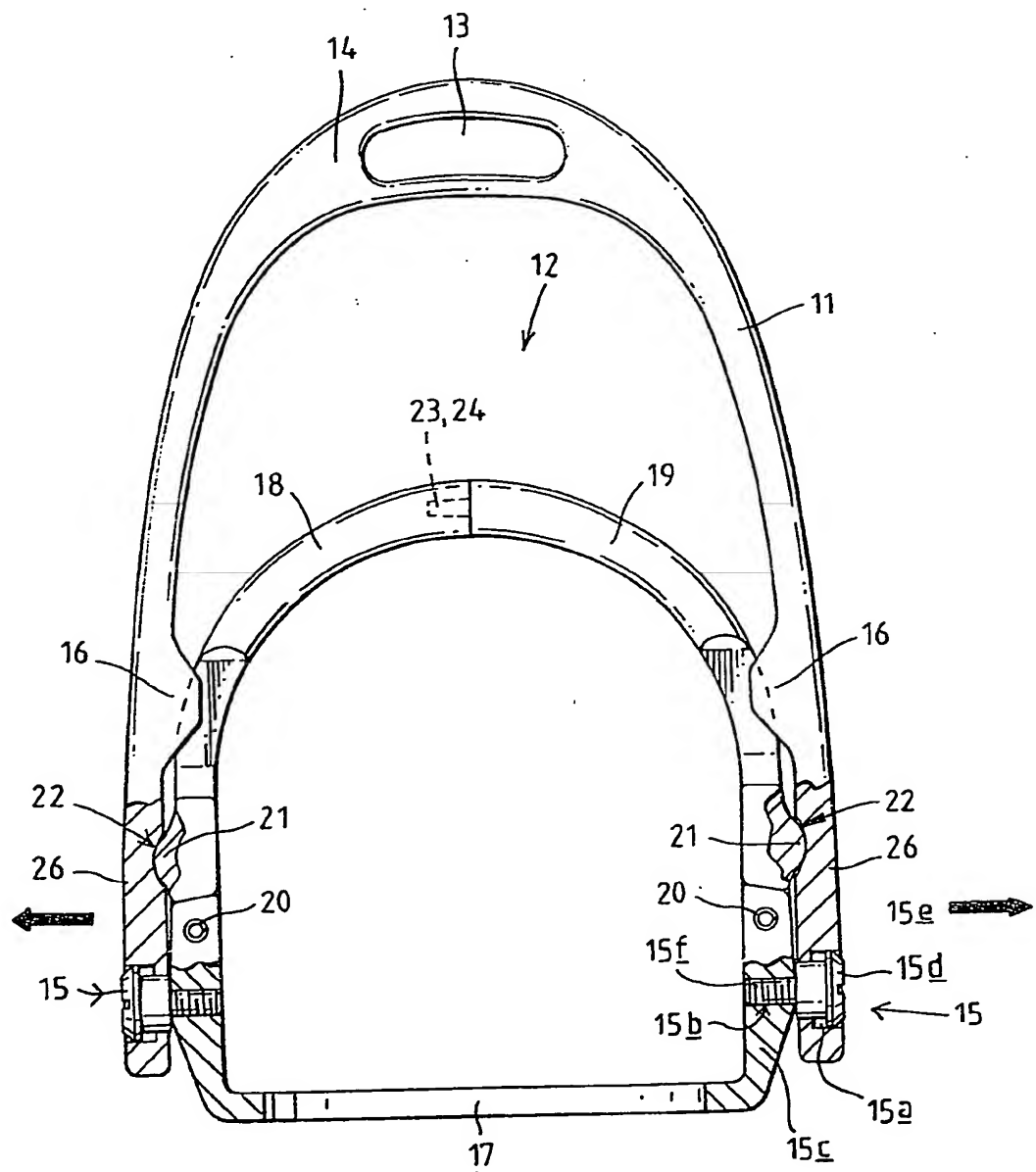


Fig. 4.

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